

010302



Dart Aerospace Ltd.  
1270 Aberdeen St  
Hawkesbury, ON  
K6A 1K7  
Canada

Tel (613) 632-5200  
Fax 613 632-5246

**C45-C****Job Sheet 195329****Part No:** C45-C**Job Qty:** 1 pcs**Part Name:** Single Cage Assembly (C45 & C60 Hook)**Part Weight:** 0 lbs**Status:** New**Priority:** Medium**Job Created:** 5/17/19**Job Tracking No:****Due Date:** 5/29/19**Created By:** Marie Lajeunesse**Type:** SOLD**Description:**

**Note:** C45-C rev.E IPP REV:A 18.01.22 NEW ISSUE DD VERF:DP IPP REV:B 19.05.02 AS PER DWG REV.E DD VERF:DP

**Ship Via:****Bill of Materials****Job Routing**

| Op No | Operation                   | Qty   | Start Date | Due Date | Standard  |         | Workcenter/Supplier     |           | Sign-off |
|-------|-----------------------------|-------|------------|----------|-----------|---------|-------------------------|-----------|----------|
|       |                             |       |            |          | Setup Hrs | Run Hrs | Workcenter / Supplier   | Lead Time |          |
| 100   | External Load - Issue SN    | 1 pcs | 5/29/19    |          | 0.00      | 1.00    | External Load - 1       |           | Michel   |
|       |                             |       |            |          |           |         | External Load - 2       |           |          |
|       |                             |       |            |          |           |         | External Load - 3       |           |          |
| 110   | External Load - 2 - B4B     | 1 pcs | 5/29/19    |          | 0.00      | 0.50    | External Load - 1 - B4B |           | Michel   |
|       |                             |       |            |          |           |         | External Load - 2 - B4B |           |          |
|       |                             |       |            |          |           |         | External Load - 3 - B4B |           |          |
| 120   | QC 5                        | 1 pcs | 5/29/19    |          | 0.00      | 0.00    | QC 5 - 10               |           |          |
|       |                             |       |            |          |           |         | QC 5 - 12               |           |          |
|       |                             |       |            |          |           |         | QC 5 - 17               |           |          |
|       |                             |       |            |          |           |         | QC 5 - 18               |           |          |
|       |                             |       |            |          |           |         | QC 5 - 19               |           |          |
|       |                             |       |            |          |           |         | QC 5 - 22               |           |          |
|       |                             |       |            |          |           |         | QC 5 - 24               |           |          |
|       |                             |       |            |          |           |         | QC 5 - 3                |           |          |
|       |                             |       |            |          |           |         | QC 5 - 43               |           |          |
|       |                             |       |            |          |           |         | QC 5 - 49               |           |          |
|       |                             |       |            |          |           |         | QC 5 - 51               |           |          |
|       |                             |       |            |          |           |         | QC 5 - 58               |           |          |
|       |                             |       |            |          |           |         | QC 5 - 68               |           |          |
|       |                             |       |            |          |           |         | QC 5 - 9                |           |          |
|       |                             |       |            |          |           |         | QC 5 - 50               |           |          |
|       |                             |       |            |          |           |         | QC 5 - 30               |           |          |
|       |                             |       |            |          |           |         | QC 5 - 40               |           |          |
| 140   | Packaging 3-1 - Stock - B4B | 1 pcs | 5/29/19    |          | 0.00      | 0.00    | Packaging 3 - 1 - B4B   |           |          |
|       |                             |       |            |          |           |         | Packaging 3 - 2 - B4B   |           |          |
|       |                             |       |            |          |           |         | Packaging 3 - 3 - B4B   |           |          |
|       |                             |       |            |          |           |         | Packaging 3 - 4 - B4B   |           |          |
|       |                             |       |            |          |           |         | Packaging 3 - 5 - B4B   |           |          |
|       |                             |       |            |          |           |         | Packaging 3 - 6 - B4B   |           |          |
|       |                             |       |            |          |           |         | Packaging 3 - 7 - B4B   |           |          |



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1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
CANADA  
TEL.: 1 613 632-5200  
Email: sales@dartaero.com  
www.dartaerospace.com

**Container No:** S189310**Part:** C45-C**Job No:** 195329**Serial No/Batch:** S189310**Revision:** E**Inspector:****Exp Date:****Instructions:**

Date: 06/11/19

DAS 30 JUN 2019

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|     |            |       |         |                        |             |
|-----|------------|-------|---------|------------------------|-------------|
|     |            |       |         | Packaging 3 - 8 - B4B  | DAS 30 9-89 |
|     |            |       |         | Packaging 3 - 9 - B4B  |             |
|     |            |       |         | Packaging 3 - 10 - B4B |             |
|     |            |       |         | Packaging 3 - 11 - B4B |             |
|     |            |       |         | Packaging 3 - 12 - B4B |             |
|     |            |       |         | Packaging 3 - 13 - B4B |             |
|     |            |       |         | Packaging 3 - 14 - B4B |             |
|     |            |       |         | Packaging 3 - 15 - B4B |             |
|     |            |       |         | Packaging 3 - 16 - B4B |             |
|     |            |       |         | Packaging 3 - 17 - B4B |             |
|     |            |       |         | Packaging 3 - 18 - B4B |             |
|     |            |       |         | Packaging 3 - 19 - B4B |             |
|     |            |       |         | Packaging 3 - 20 - B4B |             |
|     |            |       |         | Packaging 3 - 21 - B4B |             |
|     |            |       |         | Packaging 3 - 22 - B4B |             |
|     |            |       |         | Packaging 3 - 23 - B4B |             |
|     |            |       |         | Packaging 3 - 24 - B4B |             |
|     |            |       |         | Packaging 3 - 25 - B4B |             |
|     |            |       |         | Packaging 3 - 26 - B4B |             |
|     |            |       |         | Packaging 3 - 27 - B4B |             |
|     |            |       |         | Packaging 3 - 28 - B4B |             |
|     |            |       |         | Packaging 3 - 29 - B4B |             |
|     |            |       |         | Packaging 3 - 30 - B4B |             |
|     |            |       |         | Packaging 3 - 31 - B4B |             |
|     |            |       |         | Packaging 3 - 32 - B4B |             |
|     |            |       |         | Packaging 3 - 33 - B4B |             |
|     |            |       |         | Packaging 3 - 34 - B4B |             |
|     |            |       |         | Packaging 3 - 35 - B4B |             |
|     |            |       |         | Packaging 3 - 36 - B4B |             |
| 160 | QC 21 - SA | 1 pcs | 5/29/19 | 0.00 0.00              | DAS 21 9-89 |
|     |            |       |         | QC 21 - SA - 21        |             |
|     |            |       |         | QC 21 - SA - 70        |             |
|     |            |       |         | QC 21 - SA - 53        |             |

## Part Op 100 - Issue S/N

Descriptions: 110 - (Small Fab)ASSEMBLE AS PER DWG \*\*\*HAND TIGHTEN ALL BOLTS, SPREAD COTTER PIN JUST ENOUGH SO THAT IT WILL NOT FALL OUT\*\*\*

120 - (QC5- Inspect part completeness to step on W/O)

140 - (Identify as per dwg & Stock Location: \_\_\_\_\_)

160 - QC21- Final Inspection - Work Order Release)

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## Job BOM

| Part / Item   | Component Name                 | Quantity     | Operation                    | Container |
|---------------|--------------------------------|--------------|------------------------------|-----------|
| AN12H32       | Bolt                           | 1 pcs (1 ea) | 100-External Load - Issue SN | 5159804   |
| AN310-12      | Castellated Nut                | 1 pcs (1 ea) | 110-External Load - 2 - B4B  | 5004855   |
| AN8-23A       | Bolt                           | 2 Ea (2 ea)  | 110-External Load - 2 - B4B  | 5085037   |
| C45-15-10     | Ford Bumper                    | 1 pcs (1 ea) | 110-External Load - 2 - B4B  | 5177794   |
| C45-15-11     | Nut, Cage Bumper               | 1 Ea (1 ea)  | 110-External Load - 2 - B4B  | 5085248   |
| C45-15-6      | Bushing, Lifting               | 1 pcs (1 ea) | 110-External Load - 2 - B4B  | 5180462   |
| C45-15-7      | Washer, Lifting Bolt           | 4 pcs (4 ea) | 110-External Load - 2 - B4B  | 5175984   |
| C45-18-7      | Shim                           | 4 Ea (4 ea)  | 110-External Load - 2 - B4B  | 5175117   |
| C45-19C       | Weldment                       | 1 pcs (1 ea) | 110-External Load - 2 - B4B  | 5178328   |
| MS21044N8     | Nut, Self-Lock .500-20,UNJF-3B | 2 Ea (2 ea)  | 110-External Load - 2 - B4B  | 5147505   |
| MS24665-363   | Cotter Pin                     | 1 Ea (1 ea)  | 110-External Load - 2 - B4B  | 5092509-1 |
| NAS1149C0663R | Washer                         | 1 Ea (1 ea)  | 110-External Load - 2 - B4B  | 5076016-1 |
| NAS1149F0832P | Washer                         | 4 Ea (4 ea)  | 110-External Load - 2 - B4B  | 5076018-4 |

**Job Allocations**

| Operation                    | Component Part | Required | Inventory | Allocated |
|------------------------------|----------------|----------|-----------|-----------|
| 100-External Load - Issue SN | AN12H32        | 1        | 44        | 0         |
| 110-External Load - 2 - B4B  | AN310-12       | 1        | 26        | 0         |
|                              | AN8-23A        | 2        | 68        | 0         |
|                              | C45-15-10      | 1        | 7         | 0         |
|                              | C45-15-11      | 1        | 78        | 0         |
|                              | C45-15-6       | 1        | 27        | 0         |
|                              | C45-15-7       | 4        | 61        | 0         |
|                              | C45-18-7       | 4        | 18        | 0         |
|                              | C45-19C        | 1        | 2         | 0         |
|                              | MS21044N8      | 2        | 37        | 0         |
|                              | MS24665-363    | 1        | 79        | 0         |
|                              | NAS1149C0663R  | 1        | 495       | 0         |
|                              | NAS1149F0832P  | 4        | 235       | 0         |

**Part Specifications**

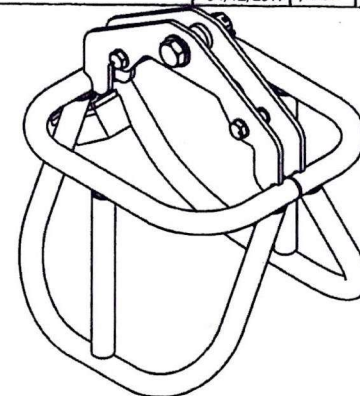
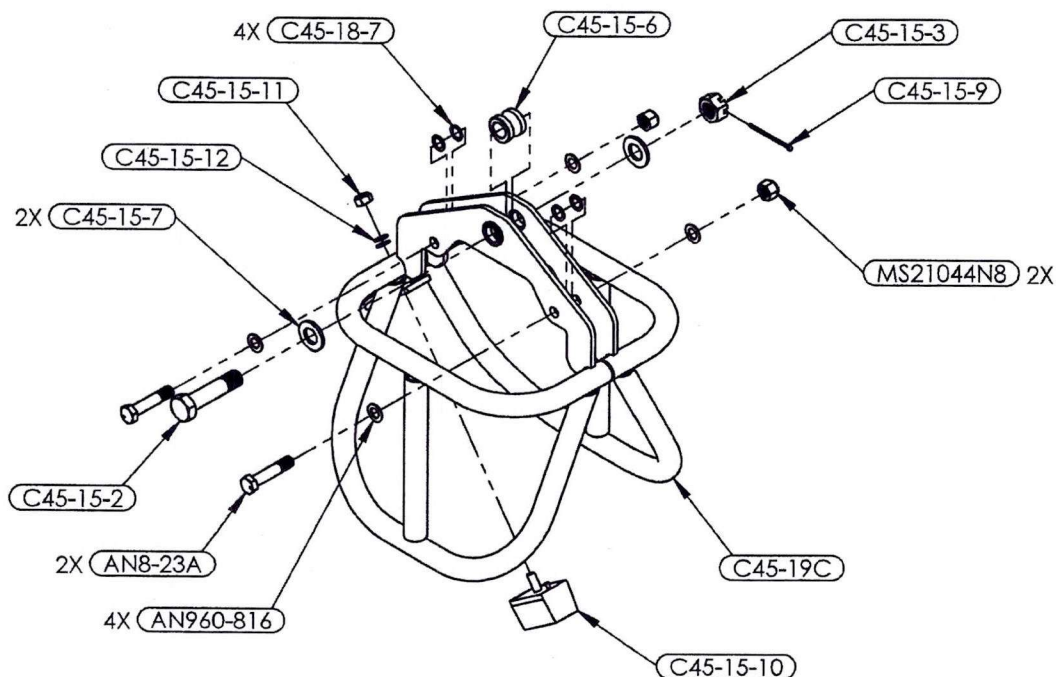
Specifications could not be found.

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| REVISIONS |         |                                                                                                                                                                                         |            |         |          |
|-----------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------|----------|
| REV       | ECR     | DESCRIPTION                                                                                                                                                                             | DATE       | INITIAL | APPROVED |
| 3         |         | AS DRAWN BY APICAL.                                                                                                                                                                     | 11/6/2012  | JAG     |          |
| 4         | 15-0180 | UPDATED TO NEW DRAFTING STANDARDS. CH'D P/N WAS C45-15-8 IS AN960-816. C45-15-4 DELETED, REPLACED WITH AN8-23A. C45-15-5 DELETED, REPLACED WITH MS21044N8. C45-18-7 ADDED TO BOM QTY 4. | 7/22/2015  | DPD     | JAG      |
| E         | 19-660  | Replace B/O Info for C45-15-2, C45-15-3 and C45-15-9, C45-15-12                                                                                                                         | 04/12/2019 | ML      | ML       |



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WORK ORDER

NO. 195329 MLC  
19-05-17

| ASSY QTY | ASSY QTY | B/O | Part #    | UNIT QTY | Description         | Material  | B/O INFORMATION OR SPECIFICATIONS           |
|----------|----------|-----|-----------|----------|---------------------|-----------|---------------------------------------------|
|          |          |     | C45-19C   | 1        | WELDMENT            |           |                                             |
|          |          |     | C45-15-2  | 1        | LIFTING BOLT        | STEEL     | AN12H32                                     |
|          |          | B/O | C45-15-3  | 1        | CASTLE NUT          | STEEL     | AN310-12                                    |
|          |          | B/O | C45-15-7  | 2        | LIFTING BOLT WASHER | STEEL     | 3/4 (MCMaster-CARR #98023A036)              |
|          |          | B/O | C45-15-9  | 1        | COTTER PIN          | S.S       | MS24665-363                                 |
|          |          |     | C45-15-10 | 1        | FORD BUMPER         |           | (#E3TZ-4730-A) MODIFIED                     |
|          |          | B/O | C45-15-11 | 1        | CAGE BUMPER NUT     | STEEL     | M10, CLASS 8 (MCMaster-CARR #90576A118)     |
|          |          | B/O | C45-15-12 | 1        | CAGE BUMPER WASHER  | STEEL     | NAS1149C0663R                               |
|          |          |     | C45-15-6  | 1        | LIFTING BUSHING     | 4140/4142 |                                             |
|          |          | B/O | C45-18-7  | 4        | SHIM                | STEEL     | .025 X Ø.511 I.D. (MCMaster-CARR #3088A412) |
|          |          | B/O | AN8-23A   | 2        | BOLT                | STEEL     | 1/2-20 X 1.47                               |
|          |          | B/O | AN960-816 | 4        | LIFTING BOLT WASHER | STEEL     | AN960-816 (NAS1149F0863P)                   |
|          |          | B/O | MS21044N8 | 2        | NUT                 | STEEL     | 1/2-20                                      |

**DART**  
AEROSPACE

C45 CAGE

|         |                                                                                               |              |                                   |
|---------|-----------------------------------------------------------------------------------------------|--------------|-----------------------------------|
| TITLE   | C45-C                                                                                         |              | REV<br>E                          |
| DWG NO. | C45-C                                                                                         |              |                                   |
| MATL    | UNLESS OTHERWISE SPECIFIED<br>DIMENSIONS ARE IN INCHES<br>.XXX ± .005<br>.XX ± .01<br>.X ± .1 |              | DRAWN BY: APICAL<br>APPROVED: MLC |
|         | FRACTIONS ± 1/8<br>ANGLES ± 5°                                                                |              | HEAT TREAT<br>FINISH<br>SPEC      |
|         | 1. BREAK ALL SHARP EDGES .015 x 45°<br>OR .015R<br>2. DIMENSIONAL LIMITS APPLY AFTER PLATING  |              | USED ON MODEL                     |
| SCALE   | 1:8                                                                                           | DATE         | 4/12/2019                         |
|         |                                                                                               | SHEET 1 OF 1 |                                   |

Entered: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. \_\_\_\_\_

Route update only ☐

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| Job: _____<br><br>Part No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/> | <b>DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/> </div> <div>           Eng. (Non-AW) <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Water Jet <input type="checkbox"/><br/>           Supplier <input type="checkbox"/><br/>           Quality <input type="checkbox"/> </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                        |  |
| Date : _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Sequence #: _____                                                                                                                 | QTY Affected : _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  | MRB (QSI042)           |  |
| Description Work Order Deviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                   | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  | Completed By           |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | Lead hand / Supervisor |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | QC / QA Coordinator    |  |
| <b>Root Cause</b><br><br><div style="display: flex; flex-direction: column; align-items: flex-start;"> <div>Operator <input type="checkbox"/></div> <div>Manufacturing Process <input type="checkbox"/></div> <div>Equip/Tooling <input type="checkbox"/></div> <div>Handling/Preservation <input type="checkbox"/></div> <div>Material <input type="checkbox"/></div> <div>Product Improvement <input type="checkbox"/></div> <div>Process Improvement <input type="checkbox"/></div> <div>Human Factors <input type="checkbox"/></div> </div> |                                                                                                                                   | <b>FAULT CATEGORY</b><br><br><div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Pressure/Forced<br/> <input type="checkbox"/> Bending<br/> <input type="checkbox"/> Crushing<br/> <input type="checkbox"/> Cracks<br/> <input type="checkbox"/> Crimp/Kink/Ripple/Wave/Twist<br/> <input type="checkbox"/> Marks/Chatter<br/> <input type="checkbox"/> Mislabeled         </div> <div style="width: 50%;"> <input type="checkbox"/> Contamination<br/> <input type="checkbox"/> Misaligned/off center<br/> <input type="checkbox"/> BOM/Route<br/> <input type="checkbox"/> Broken/Damage/Defect<br/> <input type="checkbox"/> Incomplete/Unclear Instructions<br/> <input type="checkbox"/> Drill Holes<br/> <input type="checkbox"/> Fit/Function         </div> <div style="width: 50%;"> <input type="checkbox"/> Power Loss/Surge<br/> <input type="checkbox"/> Folio/Program<br/> <input type="checkbox"/> Grain Direction<br/> <input type="checkbox"/> Weld<br/> <input type="checkbox"/> Wrong Stock Pulled<br/> <input type="checkbox"/> Out of Sequence<br/> <input type="checkbox"/> Off-set/Set-up         </div> <div style="width: 50%;"> <input type="checkbox"/> Positioned Wrong<br/> <input type="checkbox"/> Outside Tolerance<br/> <input type="checkbox"/> Drawing<br/> <input type="checkbox"/> Finish<br/> <input type="checkbox"/> Part Lost/Missing<br/> <input type="checkbox"/> Misread         </div> </div> |  |                        |  |
| Other/Details:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                        |  |